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COMPLETE SPECIFICATION.

Method and Apparatus for Measuring and Profiling the Wheel Rims of Rail Car Wheel-Sets.

We, HOESCH MASCHINENFABRIK DEUTSCHLAND AKTIENGESELLSCHAFT, of Borsigstrasse 22, Dortmund, Germany, a German Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a method of measuring and reprofiling the wheel rims of wheel-sets whilst mounted on rail cars, as well as to wheel-rim measuring and reprofiling apparatus.

The wheel rims of the wheel-sets of railway rail cars need to be reprofiled after a certain period of service due to wear in the profiles of the wheel rims. In order to locate the positions of wear, manually operated measuring gauges have been used, or, in the case of underground shaping machines, measuring rollers mounted on the machines have been used, by means of which the diameters of the two wheel rim profiles of a wheel-set are ascertained. The reprofiling of the wheel-set rims then takes place on the underground shaping machine in which both wheel rim profiles are set up in the direction of the greatest wear of the profile.

The known underground machines for measuring and reprofiling the wheel rims of wheel-sets of rail cars have the disadvantage that owing to the measurement and shaping of the wheel-set being carried out in a single machine a long operational time is required for each rail car. A further disadvantage arises in the handling of powered rail cars with coupled drive shafts for the wheel-sets, since the wheel-sets must each be uncoupled from the drive shafts before the measuring and shaping operations.

[Price 4s. 6d.]

For the handling of certain powered rail cars an underground machine has been proposed in which the coupled wheel-sets not actually being reprofiled run on idling devices during the measurement and shaping of each successive wheel-set. By means of the idling devices the time previously required for uncoupling and recoupling the wheel-sets is no longer necessary. However, this system has the disadvantage of requiring a large amount of time for mounting and removing the idling devices before and after the handling of each wheel-set.

It is an object of the present invention to overcome the above-mentioned disadvantages. In accordance with the invention this is achieved by a method in which a rail car stationary on a track is raised with its wheel-sets by wheel-set measuring trolleys movable along the direction of the track, has its wheel-sets measured, and in a raised position is carried into an underground wheel-rim shaping machine in which the wheel-sets are successively reprofiled at the wheel rim and are then set back upon the track.

The reprofiled wheel-sets may then be re-supported by wheel-set measuring trolleys for re-measurement and/or for idling rotation.

Also in accordance with the invention, a wheel-rim measuring and reprofiling apparatus for rail car wheel-sets comprises a track on which rail cars are arranged to run, a plurality of wheel-set measuring trolleys movable along the direction of said track and arranged to raise and lower the wheel-sets of a rail car from and to said track and effect measurement of the wheel-sets in a raised position thereof, and an underground wheel-rim shaping machine to which

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the trolleys carry the wheel-sets mounted on the rail car for reprofiling.

According to one embodiment of the invention, each measuring trolley includes lifting means with which is associated a lifting arm having two pairs of rollers which engage the wheel-set.

Preferably, one roller of each pair is mounted on a common shaft driven by a variable speed motor.

The measuring of a wheel-set preferably takes place from underneath with two measuring heads movably mounted on said lifting arm in the spaces between the pairs of rollers. For the trolley drive, a braking motor preferably drives each trolley.

In order that the invention may be fully understood a preferred embodiment thereof will now be described in detail by way of example and with reference to the accompanying drawings, in which:

Fig. 1 shows a rail car which has been raised into a measuring position by four measuring trolleys positioned in advance of the underground wheel-set shaping machine;

Fig. 2 is an enlarged and more detailed view of one of the measuring trolleys shown in Fig. 1; and

Fig. 3 is a view of half of one measuring trolley and of the underground wheel-set shaping machine looking along the track on which the wheel-set runs.

In Fig. 1 a rail car to be inspected is indicated generally at 1. After the rail car 1, which has four wheel-sets 6, has been brought to a standstill on the track 2 on which it normally runs four wheel-set measuring trolleys 3 are guided into place beneath the four wheel-sets 6 mounted on the rail car. These trolleys 3 run on rails 4 which extend parallel to the track 2 and which extend through the underground wheel-set shaping machine 5. Lifting devices 7 mounted on the trolleys 3 are then actuated to cause respective lifting cross-ties 8 provided each with four rollers 9 to engage the wheel-sets 6 and thus raise the rail car 1 from the track 2 to a level where the bottoms of the wheel-sets lie on a line a-b (Fig. 2). At the level a-b each wheel-set 6 is caused to rotate by the engagement of a drive roller system 10 therewith. Two measuring heads 11 are associated with each wheel-set 6 and are movably mounted on the lifting cross-ties 8. These heads 11 measure the wheel-sets 6 from below in the space between the pairs of rollers 9 associated with each wheel.

The drive roller system 10 of each wheel-set measuring trolley 3 comprises two of the rollers 9 mounted on a shaft 12 and driven through a gear system 13 from a motor 14 which is adjustable in speed. After the measurement of the wheel-sets by the measuring heads 11 the drive roller systems

10 are de-energised one after another, the measuring heads 11 are lowered from the spaces between the rollers 9, and the rail car 1 is lowered until the wheel-sets 6 are at the level c-d shown in Fig. 2.

The movement of the rail car 1 when raised from the track 2 is carried out by the energisation of the trolley drive mechanism 15. A braking motor 16 is preferably provided to effect this drive movement of the trolley in order to ensure an exact positioning of the wheel-set measuring trolleys themselves and of the raised rail car 1.

When a wheel-set measuring trolley 3 carrying a wheel-set 6 is positioned above the underground wheel-set shaping machine 5 (Fig. 3), the wheel-set 6 is set down upon two track portions 18 by a lowering of the four rollers 9 which respectively engage the two wheel flanges 17.

Then, the support rollers 9 are moved axially inwards out of supporting engagement with the wheels and two track portions 19 on either side of the track portions 18 pivot to one side in order that drive rollers 20 of the underground wheel-set shaping machine 5 can be moved into engagement with the wheels of the wheel-set 6. The reprofiling of the wheel-set 6 then takes place in known manner by rotary movement after the two track portions 18 have been lowered out of the working region of the shaping tools 21.

During the reprofiling of the wheel-set 6 the other wheel-sets still remain in coupled rotational connection therewith. In this embodiment, the main drive 22 of the shaping machine is aided by the drive roller systems 10 which simultaneously drive the other wheel-sets.

After the reprofiling of the wheel-set 6 the wheel-set is set back on to the track portions 18 of the track 2 or is again supported by the wheel-set measuring trolleys 3 for re-measurement and/or for idling rotation.

This arrangement has the advantage that coupled wheel-sets on powered rail cars can be quickly measured, reprofiled and re-measured. In the reprofiling of a coupled wheel-set the main drive for the underground wheel-set shaping machine is therefore backed up by the aiding action of the other wheel-set drive rollers.

No traction or feeding means are necessary for moving the rail car into the underground wheel-set shaping machine other than the trolley driving means.

WHAT WE CLAIM IS:—

1. A method of measuring and reprofiling the wheel rims of rail car wheel-sets whilst mounted on rail cars, in which a rail car stationary on a track is raised with its wheel-sets by wheel-set measuring trolleys movable along the direction of the track,

has its wheel-sets measured, and in a raised position is carried into an underground wheel-rim shaping machine in which the wheel-sets are successively reprofiled at the wheel rim and are then set back upon the track.

2. A method as claimed in claim 1, wherein the reprofiled wheel-sets are re-supported by the wheel-set measuring trolleys for re-measurement and/or for idling rotation.

3. A method of measuring and reprofiling the wheel rims of rail car wheel-sets substantially as hereinbefore described with reference to the accompanying drawings.

4. Wheel-rim measuring and reprofiling apparatus for rail car wheel-sets comprising a track on which rail cars are arranged to run, a plurality of wheel-set measuring trolleys movable along the direction of said track and arranged to raise and lower the wheel-sets of a rail car from and to said track and effect measurement of the wheel-sets in a raised position thereof, and an underground wheel-rim shaping machine to which the trolleys carry the wheel-sets mounted on the rail car for reprofiling.

5. Wheel-rim measuring and reprofiling apparatus according to claim 4, wherein a track is provided for the wheel-set measuring trolleys extending parallel to the track on which the wheel-sets run and through the underground wheel-set shaping machine.

6. Wheel-rim measuring and reprofiling apparatus according to claim 4 or 5, where-

in each wheel-set measuring trolley includes lifting means with which is associated a lifting arm having two pairs of rollers which engage the wheel-set.

7. Wheel-rim measuring and reprofiling apparatus according to claim 6, wherein two measuring heads are movably mounted on each lifting arm, said measuring heads measuring the wheel-set from below in the longitudinal spaces between the pairs of rollers.

8. Wheel-rim measuring and reprofiling apparatus according to claim 6 or 7, wherein one roller of each pair is mounted on a common shaft driven by a variable speed motor.

9. Wheel-rim measuring and reprofiling apparatus according to any of claims 6 to 8, wherein the rollers are displaceable in their axial direction.

10. Wheel-rim measuring and reprofiling apparatus according to any of claims 4 to 9, wherein a braking motor drives each trolley.

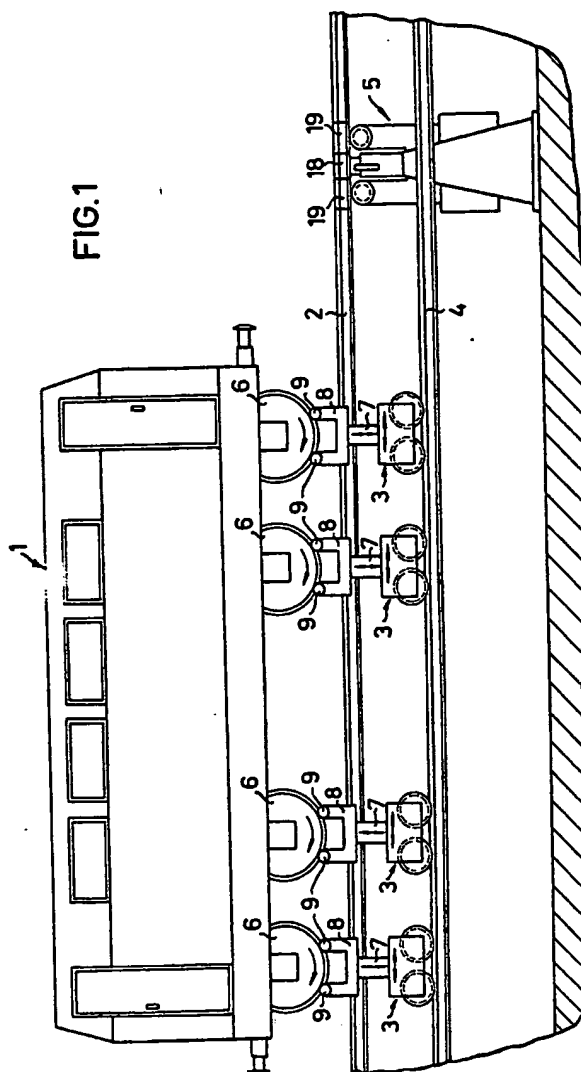
11. Wheel-rim measuring and reprofiling apparatus for rail car wheel-sets substantially as hereinbefore described with reference to the accompanying drawings.

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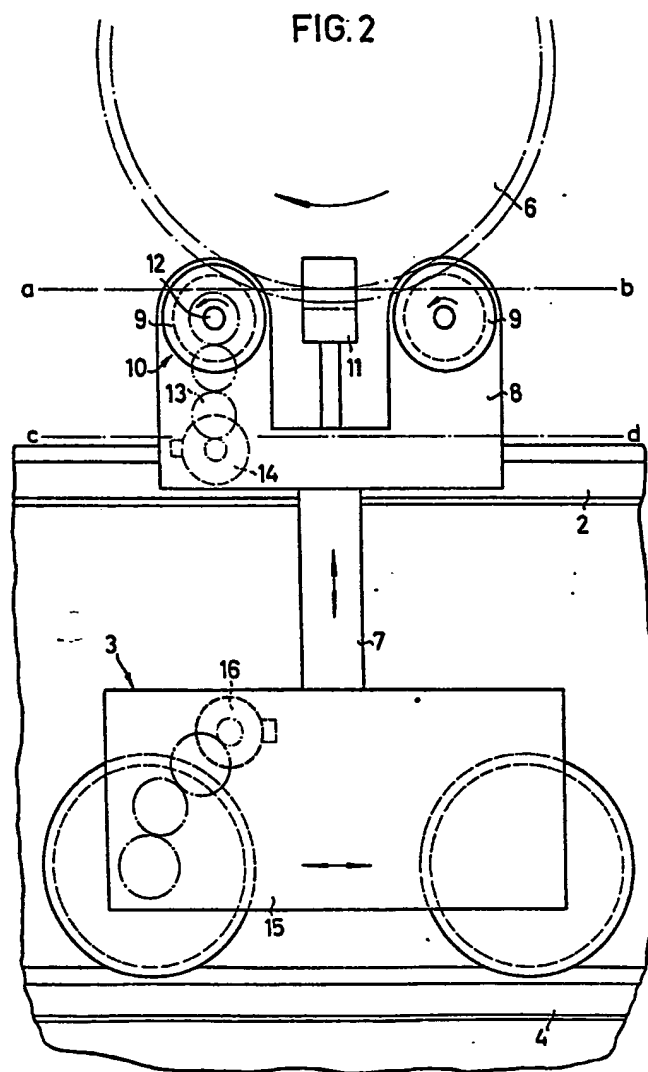
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Sheet 1



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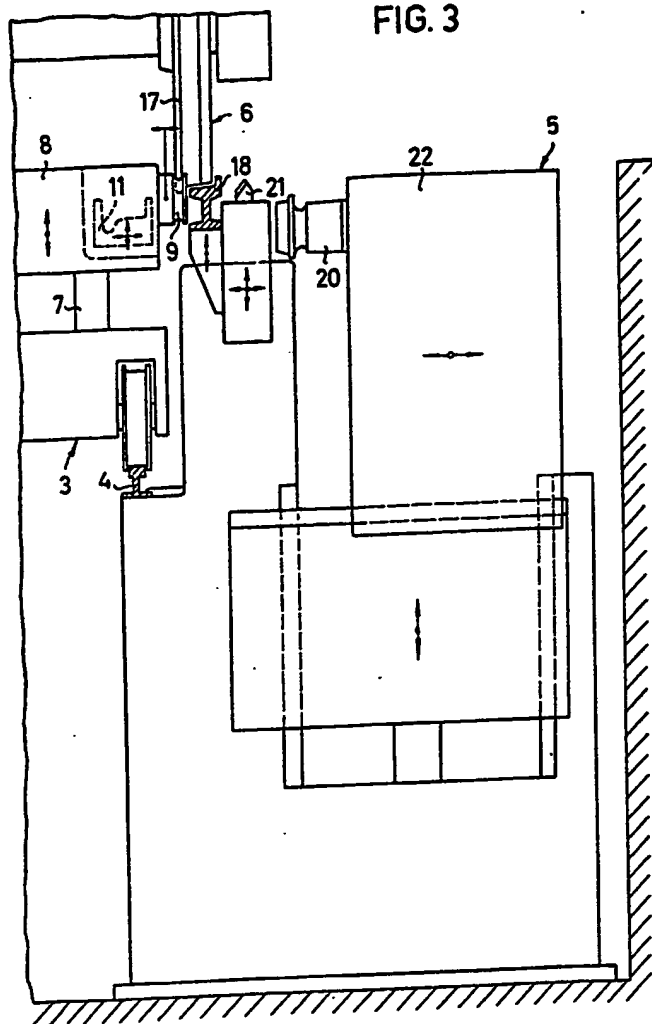
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FIG. 3



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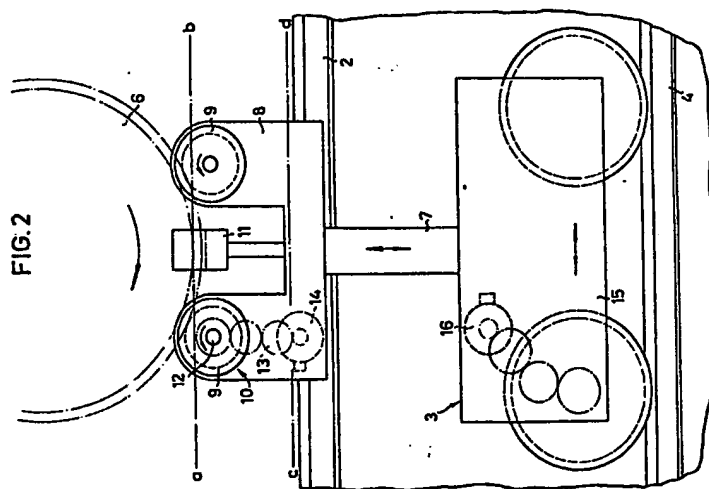


FIG. 2

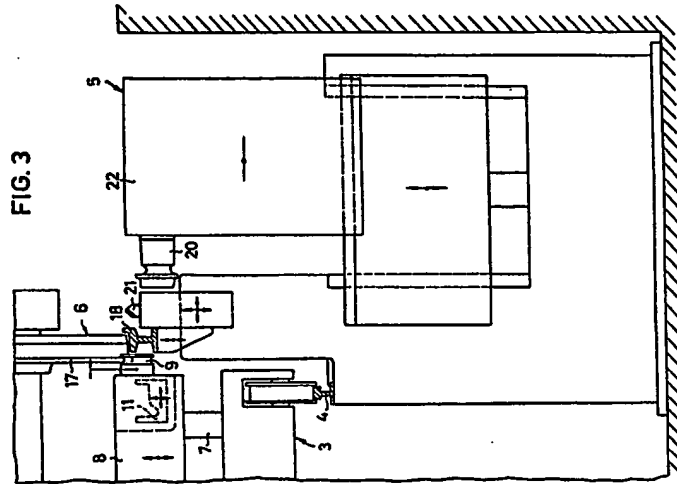


FIG. 3

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